

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: EDS-27(154) & (127) Floyd
P. I. No.: 621600 & 662420
South Rome Bypass

OFFICE: Engineering Services

DATE: April 19, 2004

FROM: David Mulling, Project Review Engineer *DEM*

TO: Brent Story, State Consultant Design Engineer

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY/PROFILE (RW)				
1.0	Re-design project North Termini EDS - 27(127)	\$2,092,000	No	Increased Environmental impacts. May result in a longitudinal encroachment to an existing stream as well as additional R/W impacts. Also introduces a Loop Ramp at the interchange.
1.1	Re-design grade separation at SR-1 Loop & SR 20	\$2,500,000	No	Not equal or better than what was originally proposed. Introduces two Loop Ramps which will have lower Design Speeds.
1.2	Re-configure ramps at SR-1 Loop & SR 20	\$842,000	No	Not equal or better than what was originally proposed. Introduces two Loop Ramps which have lower Design Speeds.
1.4	Provide for grade separated interchange at the current intersection at SR 20/US411 and SR 1 Loop	Design Suggestion	No	May result in a longitudinal encroachment to an existing stream.

ALT No.	Description	Savings PW & LCC	Implement	Comments
3.0	Eliminate all at grade crossings EDS-27 (127 & 154)	Design Suggestion	No	"Access Rights" issues would make this suggestion too costly.
4.0	Reduce roadway median width in high cut sections from 44' wide to 20' wide with barrier separator	\$1,478,000 Note: This savings will ultimately depend on the amount of rock encountered on the project. See attached e-mail.	No	The 20' median is not consistent with current "GRIP" corridor guidelines. The 44' median would better accommodate future widening.
4.1	Reduce median width from 44' wide to 20 wide and include barrier for the total length of both projects.	\$10,000,000	No	The intent of the barrier was to reduce the typical section only in the high rock cut sections thus minimizing the total amount of waste on the project.
5.0	Adjust profile to meet/comply with 55 mph speed and increase the maximum grade to 6%	\$10,600,000	No	Not equal or better. Not consistent with other GRIP corridors.
7.0	Steepen fill slopes using "Geogrid" fabric	Design Suggestion	Yes	Will be addressed during Soil Survey Investigation.
8.0	Use a vertical cut section in areas where hard rock is encountered in lieu of a 2:1 slope	\$12,200,000	Yes	Will be addressed during Soil Survey Investigation.
9.0	Design retaining walls in deep cut sections in lieu of 2:1 slope	Design Suggestion	Yes	Will be addressed during Soil Survey Investigation.
11.0	Allow excavated rock to be re-used as base course and as aggregate in PCC pavement	\$2,240,000	Yes	Dependant on the material meeting GDOT Specifications.
12.0	Use excavated rock as rip-rap, ditch and slope paving in lieu of purchase of new materials	Design Suggestion	Yes	Dependant on the material meeting GDOT Specifications.
13.0	Include ramps to/from US 27 in this project scope	Design Suggestion	Yes	Final determination will be made depending on schedule of two adjacent projects.

15.0	Install concrete pavement at signalized intersections in lieu of Superpave asphalt	Design Suggestion	Yes	Should be considered in Pavement Design Analysis.
STRUCTURAL/BRIDGES (SB)				
1.0	Shorten bridge over CR 48, Norfolk Railroad, and Chambers Mill Road (855 LF vs. 1435 LF)	\$5,881,986	No	Results in increased cut in areas where rock is suspected. This extra cost was not reflected in the cost estimate in the VE Study Report. See other comments from Heath & Lineback.
2.0	Open cut tunneling	Design Suggestion	No	The advantage of re-using the waste does not appear to justify the extra expense associated with tunneling, lighting, ventilation, etc. See other comments from Heath & Lineback.
3.0	Eliminate bridge with culvert at Old Rockmart Road -EDS -27(154)	\$4,300,000	No	Results in increased cut in areas where rock is suspected. This extra cost was not reflected in the cost estimate in the VE Study Report. See other comments from Heath & Lineback.
4.0	Reduce median at bridge from 44' wide to zero feet wide and construct a single bridge	\$3,400,000	No	Results in increased cut in areas where rock is suspected. This extra cost was not reflected in the cost estimate in the VE Study Report. See other comments from Heath & Lineback.
8.0	Construct Arch and or slanted leg bridges in lieu of multi-span bridges	Design Suggestion	No	Results in increased cut in areas where rock is suspected. This extra cost was not reflected in the cost estimate in the VE Study Report. See other comments from Heath & Lineback.

A meeting was held on March 25, 2004 to discuss the above recommendations. Ben Rabun and Tom Hodges of Consultant Design, Jennifer Mathis of the Office of Environment/Location, Eddie Schrock of Williams, Sweitzer & Barnum, Joshua Cooley of Heath and Lineback, and Ron Wishon of the Office of Engineering Services were in attendance.

The above reflects the consensus of those in attendance and those that provided comments.

Approved: 
Paul V. Mullins, P. E., Chief Engineer

Date: 5/14/04

DTM/REW

Attachments

- c: Gus Shanine, FHWA
Chris Wagner, FHWA
Ben Rabun, Consultant Design
Tom Hodges, Consultant Design
Jennifer Mathis, Office of Environment/Location
Lindsey Gardner, U.S. Cost, Inc.
Lisa Myers, Engineering Services
George Bradfield, Engineering Services
General Files

Wishon, Ron

From: Hodges, Tom
Sent: Friday, April 16, 2004 3:09 PM
To: Wishon, Ron
Subject: RE: FW: 621600 & 662420 VE IMPLEMENTATION.doc

Ron, If \$5.25 per cu. yd. for excavation is assumed, the design consultant estimates that savings of \$1.2 million for (154) and \$0.3 million for (127) could be realized by providing the narrower median resulting in a total of \$1.4 million in savings for both projects. If significant rock cut is encountered the savings could be greater.

Tom Hodges, P.E.
 Design Group Manager
 Georgia Department of Transportation
 Office of Consultant Design
 No. 2 Capitol Square, SW, Rm 433
 Atlanta, Georgia 30334-1002
 (404) 656-5397
 (404) 463-6136 fax
tom.hodges@dot.state.ga.us

-----Original Message-----

From: Wishon, Ron
Sent: Wednesday, April 14, 2004 8:49 AM
To: Hodges, Tom
Subject: RE: FW: 621600 & 662420 VE IMPLEMENTATION.doc

So what will be the total savings for RW-4.0 --- \$3.6 million was shown in the VE Report.

-----Original Message-----

From: Hodges, Tom
Sent: Tuesday, April 13, 2004 10:54 AM
To: Wishon, Ron
Subject: FW: FW: 621600 & 662420 VE IMPLEMENTATION.doc

Ron, I asked Eddie Schroch of WS&B to review the VE estimates for savings using a 20' median compared to a 44' median. Eddie said that the savings for EDS-27(154) looked reasonable and that the cost per cu. yd. for excavation could be higher if much rock is encountered.

Eddie said that the savings for EDS-27(127) might be much lower than those predicted by the VE team. The VE team did not have actual cross sections for (127). Eddie used the previous concept cross sections (the alignment that was abandoned due to the land fill) for an indication of the volumes and estimated the savings for (127) would be more like \$288,000 using \$5.25/cu. yd.

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-----Original Message-----

From: Wsbco@aol.com [mailto:Wsbco@aol.com]
Sent: Friday, April 09, 2004 3:19 PM
To: Hodges, Tom
Subject: Re: FW: 621600 & 662420 VE IMPLEMENTATION.doc

In a message dated 4/8/04 9:31:38 AM Eastern Daylight Time, Tom.Hodges@dot.state.ga.us writes:

Eddie, Please review the VE team's calculations for savings predicted by utilizing a 20' median through the areas of high cut sections to help determine if actual savings can be realized and this recommendation

should be implemented. Thanks.

Tom Hodges, P.E.
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tom.hodges@dot.state.ga.us

Tom,

We have reviewed the cost savings associated with a reduction in the median from 44 ft. to 20 ft. and offer the following comments:

For cut areas greater than 20 ft. in depth, we measured the area of the profile between the existing and proposed grades to provide a guesstimate of the volume in a 24 ft. wide section. We found the volume in Unit 154 to be approx. 320,000 CY and in Unit 127 approx. 105,000 CY. The unit costs given in the report for this excavation is \$5.25 per CY which equates to \$1,680,000 for Unit 154 and \$551,000 for Unit 127. These costs are offset by the costs of concrete barrier and additional 20 ft. wide pavement which we have estimated to be \$490,000 for Unit 154 and \$263,000 for Unit 127. Therefore, the total costs savings for Unit 154 are estimated at \$1,190,000 and for Unit 127 at \$288,000 for a total of \$1,478,000. The savings given in the report total \$3,600,000. It should be noted that the excavation cost could actually be much higher depending on the quantity and hardness of the rock encountered.

Eddie Schrock
Williams, Sweitzer, and Barnum, Inc.
706-234-0552

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PRECONSTRUCTION DIVISION
OFFICE OF CONSULTANT DESIGN**

LETTER OF TRANSMITTAL

DATE: February 16, 2004
PROJECT: EDS-27(154), (127)
COUNTY: Floyd
P.I. NO. 621600, 662420

TO: David Mulling, Project Review Engineer

ATTENTION: Ron Wishon

We are sending you attached under separate cover

ITEMS:	<input checked="" type="checkbox"/> Correspondence	<input type="checkbox"/> Plan Sheets	<input type="checkbox"/> Utility Plans
	<input type="checkbox"/> Special Provisions	<input type="checkbox"/> Profile Sheets	<input type="checkbox"/> Geometry Layout
	<input type="checkbox"/> Typical Sections	<input type="checkbox"/> Preliminary Plans	<input type="checkbox"/> Revision (s)
	<input type="checkbox"/> Summary of Quantities	<input type="checkbox"/> Right of Way Plans	<input type="checkbox"/> Prints
	<input type="checkbox"/> Detailed Estimate	<input type="checkbox"/> Construction Plans	<input type="checkbox"/> Original Tracings
	<input type="checkbox"/> Other:		

COPIES

DESCRIPTION

One copy of consultant's responses to VE recommendations

These are transmitted as checked below:

As requested For your use For approval For review and comment
 For revision For your information Other:

REMARKS: If further information is required please contact Tom Hodges at (404) 656-5397.

Signed: BAS / AH
For Brent A. Story, P.E.
State Consultant Design Engineer

BAS/TAH

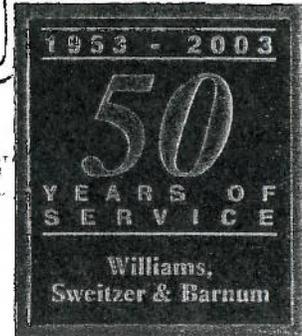
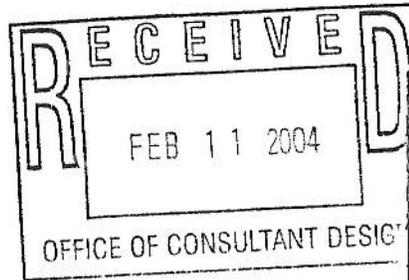
WILLIAMS, SWEITZER & BARNUM, INC.

Robert L. Moss, P.E., R.L.S.
John E. Schrock, P.E.

ENGINEERS • SURVEYORS

2232 Redmond Circle
Rome, Georgia 30165-2087
Telephone: 706/234-0552
Facsimile: 706/234-0556

February 10, 2004



Mr. Tom Hodges, Project Liaison
Georgia Department of Transportation
Office of Consultant Design
2 Capitol Square
Atlanta, Georgia 30334

**RE: Value Engineering Study
South and Southeast Rome Bypass
EDS-27(127) and (154) Floyd County
P. I. Nos. 662420 and 621600
J-15578, J-15579**

Dear Mr. Hodges:

We have completed our review of the Value Engineering Study on the referenced project and offer the following comments. In addition, comments from Engineers of Heath & Lineback are also enclosed. Our comments are as follows:

SB-1.0 - Shorten Bridge Over C.R. 48, Norfolk Railroad and Chambers Mill Road (855 L.F. vs. 1,435 L.F.)

Comments: The cost estimates given in the report did not address the additional cost that would be associated with the deeper cuts in rock, as a result of lowering the profile grade by 50 feet. A grade intersection at Reeceburg Road would likely require signalization. In addition, right hand turn lanes of at least 350 feet north and south of the bypass along Reeceburg Road will be required. To accommodate the at-grade intersection, it is likely that several residences and apartment buildings must be relocated, all depending on the approach grades along Reeceburg Road. It should also be noted that the bypass deceleration lane for right north bound turns onto Reeceburg Road may approach 500 feet in length. This may require that the bridge width be increased to accommodate the deceleration lane.

SB-2.0 - Open Cut Tunneling

Comments: The cost of a tunnel appears cheaper to construct than excavation and removal of earthwork and rock, however, the disadvantages given in the report should be considered.

SB-3.0 - Eliminate Bridge with Culvert at Old Rockmart Road, EDS-27 (154).

Comments: The report estimated that the length of the culvert would be 150 feet. We estimate that it could be at least twice that long. Approximately 400 acres of drainage is conveyed through the roadway ditches of C.R. 633 (Old Rockmart Road). Therefore, this alternative would require that a box culvert also be constructed through the embankment to handle this drainage. It should also be noted that if the roadway profile in this area is lowered by approximately 20 feet, a retaining wall along Ridgeview Drive may be required to prevent the cut section from reaching Ridgeview Drive. However, it is likely that there will be a rock cut in this area and that slopes can be much steeper than 2:1, thereby moving the construction limits away from Ridgeview Drive.

SB-4.0 - Reduce Median at Bridge from 44 Feet Wide to 0 Feet Wide and Construct a Single Bridge.

Comments: By lowering the profile of the bridges, additional rock excavation will be required. The disadvantages shown in the report create a concern for this alternative.

SB-8.0 - Construct Arch and/or Scanted Leg Bridges in Lieu of Multi-Span Bridges.

Comments: No Comments.

RW-1.0 - Redesign Project North Terminal EDS-27 (127).

Comments: This alternative is likely to require the relocation of the two businesses at the intersection of the existing bypass. In addition, it may impact the creek to the west of the current intersection. Mathis Drive (C.R. 104) currently intersects Highway 411 at the existing bypass intersection. This alternative would abandon Mathis Drive and prevent access from Callier Springs Road to Highway 411. Bridge widths may need to be increased to accommodate the acceleration lane.

RW-1.1 - Redesign Grade Separation at S.R. Loop 1 and S.R. 20.

Comments: Bridge widths will need to be increased to accommodate the acceleration/deceleration lanes across Highway 411. The drivers could experience more confusion with the proposed ramp alignment.

RW-1.2 - Reconfigure Ramps to S.R. 1 Loop and S.R. 20.

Comments: Bridge widths over Highway 411 will need to be increased to accommodate the acceleration/deceleration lanes. The drivers could experience more confusion with the proposed ramp alignment.

RW-1.4 - Provide for Grade Separated Interchange at the Current Intersection at S.R. 20/U.S. 411 and S.R. 1 Loop.

Comments: This alternative will abandon Mathis Road at its intersection with Highway 411. In addition, the many disadvantages shown in the report create a concern for this alternative.

RW-3.0 - Eliminate all at Grade Crossings - EDS-27(127) and (154).

Comments: This design would not be consistent with the existing Rome bypasses and with the western leg of the bypass now under design. It would be significantly more costly, due to the additional purchase of right-of-way, property relocations, etc. associated with bridge construction and ramps. In project EDS-27 (154), it could be cost effective to delete the at-grade intersection at Marion Dairy Road and bridge over this roadway with no access. By raising the grade at this location, the depth of rock cut through the adjacent hill (1,200 feet eastward) can be reduced. However, the elevated roadway would increase the length of the culvert in the fill area immediately to the west of Marion Dairy Road, but would also provide for an area for additional fill material to be placed.

RW-4.0 - Reduce Roadway Medium Width in High Cut Sections from 44 Feet Wide to 20 Feet Wide With Barrier Separator.

Comments: The estimate given in the report EDS-27(127) appears to be in error. Based on our preliminary work of the original route, five to six major cut areas were encountered with maximum depths ranging from 30 to 50 feet. It is anticipated that savings for that project would be less than \$300,000. Therefore, median reduction is not recommended.

RW-4.1 - Reduce Media Width from 44 Feet Wide to 20 Feet Wide and Include Barrier for Total Length of Both Projects.

Comments: See comments for SB-4.0 and RW-4.0.

RW-5.0 - Adjust Profile to Meet/Comply with 55 MPH Speed and Increase the Maximum Grade to 6%.

Comments: The cost savings of over \$6,000,000 shown for EDS-27(127) appears to be in error. It should be noted that this section of the bypass is not as hilly as in EDS-27(154). Based on our preliminary work in original concept phase, the maximum roadway grade was set at 2.4%. Five to six major cut areas were encountered with maximum depths up to 50 feet. Therefore, it is anticipated that the savings shown at \$6.168 million will not be realized. Revisions to the profile of EDS-27(154) to comply with a 55 MPH speed design would realize savings in the amount of cut that would be required throughout the project, in addition to the shortening of the proposed bridges. This is accomplished as vertical curve lengths are significantly reduced, with front and back targets at 6.0%. At a 65 MPH speed design, vertical curves would likely overlap at the 6.0% grade.

RW-7.0 - Steepen Fill Slopes Using "Geogrid" Fabric.

Comments: We are unaware of any critical areas that might require a steepened slope. If slopes are steepened, the benefit of the additional fill material being placed in the greater slope is not realized.

RW-8.0 - Use a Vertical Cut Section in Areas Where Hard Rock is Encountered in Lieu of a 2:1 Slope.

Comments: Based on the preliminary soil exploration work in EDS-27(154), Mr. Bob Goehring of ECS, Inc. stated that the vertical rock cut probably would not work in most areas because of the poor rock quality. He indicated that, at best, a 0.5H:1V is what we expect to be feasible, if not too much soil or poor rock is found.

RW-9.0 - Design Retaining Walls in Deep Cut Sections in Lieu of 2:1 Slope. It is expected that in deep cut areas, the rock could be sloped at 0.5 H:1V and a retaining wall will not be required. The only slope that appears to be critical is the one adjacent Ridgeview Drive in Project EDS-27(154). If the original profile is lowered in this area, a retaining wall will be required if slopes cannot be steepened.

RW-11 - Allow Excavated Rock to be Re-used as Base Course and Aggregate in PCC Pavement.

Comments: Mr. Bob Goehring of ECS, Inc. indicated that in the adjacent bypass project west of U.S. 27, the upper rock was found to be of a very poor quality for reuse because of layering and soil inclusions. He stated that competent rock ended up being below the final grades. At the present time, no rock cores or air track drilling have been completed on our projects to define the rock quality.

RW-12 - Use Excavated Rock as Riprap, Ditch and Slope Paving in Lieu of Purchase of New Materials.

Comments: See comment RW-11.0

RW-13 - Include Ramps to/from U.S. 27 in this Project Scope. The West Rome bypass west of U.S. Highway 27 is now projected to be constructed prior to the South and Southeast Rome bypass. For this reason, it appears logical that the ramps should be included in the West Rome bypass project.

RW-15.0 - Install Concrete Pavement at Signalized Intersections in Lieu of Superpave Asphalt.

Comments: The Georgia Department of Transportation's policy will dictate the implementation of this recommendation.

Mr. Tom Hodges, Project Liaison
February 10, 2004
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Should you have any questions, please call.

Sincerely,

WILLIAMS, SWEITZER & BARNUM, INC.

A handwritten signature in black ink, appearing to read "John E. Schrock". The signature is fluid and cursive, with a prominent initial "J" and "S".

John E. Schrock, P.E.

JES/dm

Enclosure

SB-1.0: Shorten Bridge No. 1 Length EDS-27

Proposed change recommends the following:

1. Lower profile grade elevations by 50 feet
2. Replace the first 700 feet of bridge with a fill section; re-use waste
3. Elevate Reeceburg Road to an at-grade intersection
4. Construct retaining walls at bridge ends to contain fills; new begin bridge at station 274+00

Comments:

1. Lowering profile grade elevations by 50 feet would violate minimum clearance requirements above Norfolk Southern Railroad. However, a 45 feet reduction in P.G.L. elevations would be permissible. The proposed change would require additional excavation by deepening the cut sections through the existing ridges at each end of the bridge. The cost calculations for the proposed change do not include costs for this additional excavation. Further, the additional excavation increases the volume of spoil/waste to be disposed of, which would likely offset the reuse volume credited to the change.
2. Volume calculations appear inconsistent with proposal to lower profile grade elevations. A fill section height of 90 feet is used in the volume calculation; however, the proposed change reduces profile grade elevations by 50 feet. Therefore, the reuse volume calculated is considerably over estimated. In addition, the base width of the fill section is 300 feet, which exceeds the current required R/W width of 250 feet. Also, the fill section would require roadway surfacing and guardrail treatment. No cost considerations were included for additional roadway items or additional R/W acquisition.
3. Elevating Reeceburg Road to an at-grade intersection would require a minimum of ¼ mile of profile adjustment with steep grades. The construction of fill sections to achieve this adjustment would be another opportunity for further reuse of waste material. However, the fill section would likely require additional R/W to be purchased along Reeceburg Road and would require modifications to the existing drainage pattern with potential cost impacts. None of these issues were addressed in the VE Study, nor the associated costs captured in the estimate. Also, the idea conflicts with design suggestion RW-3.0.
4. The proposed change and the calculations for wall area include walls at each end bent of the bridge. It appears that the wall at the end of the bridge may not be necessary; however, the wall area calculated in the study approximately equals the area required for a single wall at begin bridge (using a more appropriate wall height of 40 feet ±). Also, with a base fill width of approximately 300 feet, if begin bridge is placed at Station 274+00, the fill limits would encroach on the historic boundary. The wall would have to be placed at a begin bridge Station 273+50, requiring an additional 50 feet of bridge. Aesthetically, a wall offers the worst alternative by placing an ugly, out-of-place and obtrusive landmark in the center of a rural and scenic valley.

SB-2.0: Open Cut Tunneling EDS-27

Design suggestion proposes the following:

1. Lower profile grade elevation; 50 feet at Bridge No. 1; 10-20 feet at Bridge No. 2
2. Taper roadway section to eliminate median through tunnels and on bridges
3. Utilize open cut tunneling for approaches and re-use waste as backfill

Comments:

This is offered as a design suggestion, however, it appears for this option that the primary cost savings would be in the re-use of material that would otherwise be waste, and require disposal. The cost of a tunnel may likely offset this value. Other disadvantages and potential cost considerations would be:

1. Life Safety issues to address and associated costs
2. Cost of Lighting and Maintenance
3. Cost of Ventilation and Maintenance

SB-3.0: Eliminate Bridge at CR 633/Old Rockmart Road EDS-27

Proposed change recommends the following:

1. Lower profile grade elevation 10-20 feet at Bridge No. 2
2. Re-use cut/waste material to fill ravine and omit bridge
3. Install culvert or conspan arch pass CR 633 beneath fill
4. Construct retaining wall on south side to protect properties

Comments:

1. Again, cost estimate neglects additional excavation and volume of waste that will be associated with lowering the profile grade.
2. The VECP proposes fill heights of approximately 105 feet. Base fill width for this section would be approximately 500 feet or 250 feet each side of the centerline of construction. Additional R/W would be required that is not included in cost considerations. Further, no provision is provided in the study for the existing culvert beneath CR 633 that carries drainage from southeast to northwest quadrants. The existing culvert would have to be replaced with a culvert of adequate structural capacity for the proposed fill height and localized loads that would be imposed by the roadway culvert. Also, the culvert would have to be extended to convey the drainage beyond the fill limits. Fill calculations appear to be over estimated by adding 145 feet to the bridge length, using 100.33 feet for height (rather than 80 feet as used later in calculation) and calculating based on full fill section base width, while simultaneously proposing wall to retain a portion of the fill section.
3. Length of arch required beneath fill section is under estimated. If a wall were constructed full length of the ravine on the south side, the length of arch required would be approximately 315 feet on a 75° skew. Similar to SB-2.0, at this length of tunnel structure, life safety issues may impose additional constraints that will influence cost. Also, life cycle costs of lighting and possibly ventilation must be considered to properly estimate this option.
4. Wall area calculated in the study appears to be considerably underestimated, if intended to retain full length of the valley, along the south side of the roadway. If this configuration were proposed, a wall area of approximately 36,500 Sq. Ft. would be required. As in SB-1.0, aesthetically, a wall offers the worst alternative by placing an ugly, out-of-place and obtrusive landmark in the center of a rural and scenic valley.

SB-4.0: Eliminate Median and Construct Single Bridge EDS-27

Proposed change recommends the following:

1. Lower profile grade elevation; 50 feet at Bridge No. 1; 10-20 feet at Bridge No. 2
2. Eliminate median across bridges and construct single bridges as opposed to dual bridges

Comments:

1. Again, cost estimate neglects additional excavation and volume of waste that will be associated with lowering the profile grade. However, the estimate also neglects to credit the reduction in excavation that would be associated with eliminating the median in the cut sections (these costs are captured and appear to be additive with RW-4.0 as RW-4.1). Also not reflected in the cost estimate, lowering the profile grade elevation will reduce the bridge lengths. The estimates for the bridges are based upon full length.
2. The total value of the saving is computed based on the reduction of bridge width from 2 @ 41'-3" to 1 @ 71'-3". This saving is created by eliminating the inside shoulders and median or protective guardrail. This does not seem feasible for 55 mph or 65 mph design speeds. As a minimum, left shoulders should be maintained at 4 feet and a center barrier provided. Assuming a 2'-6" center barrier width, overall bridge width is 81'-9", which is net decrease of 9" in bridge width ($2 \times 41.25' = 82.5'$). As the width could not be reduced substantially, the benefits of constructing a single bridge are subverted by requiring essentially the same substructure (as dual bridges) or a substructure that would require specialized and costly construction methods.
3. The savings afforded by reducing the median width are seen more directly in the reduced cut/fill volumes required – not in the bridge structure cost.

SB-8.0: Construct Arch or Slanted Leg Bridges EDS-27

Design suggestion proposes the following:

1. Lower profile grade elevation; 50 feet at Bridge No. 1; 10-20 feet at Bridge No. 2
2. Elevate Reeceburg Road to an at-grade intersection and re-use waste material as fill at bridge ends to reduce bridge length
3. Construct arch or slant leg bridges

Comments:

1. Again, additional excavation and volume of waste that will be associated with lowering the profile grade.
2. Additional R/W and roadway items cost would be associated with the use of fill sections for both Reeceburg Road and the mainline.
3. This suggestion would create a very visually pleasing structure, but would probably not be cost effective. The Office of Bridge Design should be consulted regarding the feasibility of an arch or slant leg bridge structure. Discussions with the Bridge Office during preliminary design, regarding structure type and the desire to limit the number of piers, resulted with the decision to proceed with preliminary plans utilizing prestressed concrete girders.

RW-1.0, 1.1 & 1.2: Redesign Project North Termini or Reconfigure SR1 Loop/SR 20 Grade Separated Interchange EDS - 27(127)

Proposed change recommends the following:

1. Various revised configurations for SR1 Loop/SR 20 interchange, typically with one or two loop ramps

Comments:

1. The addition of loop ramps would more than likely impact bridge widths. Depending upon the proximity of the ramps to the bridge structures and the requirements for acceleration/deceleration lanes, the bridge widths could be expected to increase by 12'-0", possibly full length.

Value Engineering Proposal - Response EDS – 27(154) & EDS – 27(127)

RW-1.4: Reconfigure SR1 Loop/SR 20 Grade Separated Interchange EDS - 27(127)

Design suggestion proposes the following:

1. Shift SR20/US 411 alignment north and elevate above SR1 Loop and construct reinforced earth walls in northeast and southeast quadrants

Comments:

1. If the typical section of the SR 1 Loop were reconstructed to match the proposed Bypass typical section, overall bridge lengths and configurations would change little. Therefore, bridge cost impact would be negligible.
2. Extent of required reinforced earth wall difficult to estimate based on current limits of topographical information and lack of proposed grades.

RW-3.0: Eliminate All At-Grade Intersections

Design suggestion conflicts with proposed change in SB-1.0.

RW-4.0: Reduce Roadway Width in High Cut Sections with 20' Median Section with Barrier ILO 44' Depressed Median

See comments for SB-4.0.

RW-5.0: Adjust Profile to Meet 55 MPH Speed and Increase the Maximum Grade to 6%

No Comment.

RW-7.0 & 8.0: Increase Slope of Fills using Geogrid Fabric and Use a Vertical Cut Section in Areas where Rock is Encountered ILO a 2:1 Slope

The feasibility of these recommendations should come from GDOT Office of Materials and Research.